

REMARKS ¹

In this Amendment, Applicants have amended claim 1 to more appropriately define the invention. Claims 1-9 remain pending.

In the Office Action, the Examiner rejected claims 1, 3, and 6 under 35 U.S.C. § 102(b) as anticipated by Kim (U.S. Patent No. 5,318,925); rejected claims 1-3 and 6 under 35 U.S.C. § 102(e) as anticipated by Kohyama et al. (U.S. Patent No. 6,551,894); rejected claims 2-6 and 8-9 under 35 U.S.C. § 103(a) as unpatentable over Kohyama et al. or Kim, in view of Cooper et al. (U.S. Patent No. 5,219,793); and rejected claims 7-8 under 35 U.S.C. § 103(a) as unpatentable over Kohyama et al. or Kim, in view of Chang et al. (U.S. Patent No. 6,159,842) and further in view of Tsai et al. (U.S. Patent No. 6,331,480). ²

Applicants first note several inconsistencies in the Examiner's rejections. For example, the Examiner rejected claim 2 under 35 U.S.C. § 102(e) as anticipated by Kohyama et al., while acknowledging that "none of the reference[s] teach the interlayer insulating layer has a low dielectric constant . . . as claimed in claim[] 2." Office Action, p. 5. Also, the Examiner rejected claim 6 under 35 U.S.C. § 102 as anticipated by Kim and Kohyama et al., and at the same time acknowledged that these references do not teach each element of claim 6. See Office Action, p. 6, ll. 9-11. Applicants request the Examiner's clarification should he continue to make the same rejections.

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

² The detailed discussion of the Office Action indicates that the Examiner also rejected claim 3 under 35 U.S.C. § 102(b) as anticipated by Kim, Office Action, p. 3; and rejected claims 2-3 and 8 under 35 U.S.C. § 103(a) as unpatentable over Kohyama et al. or Kim, in view of Cooper et al., Office Action, p. 5.

Regardless of the above-noted inconsistencies, the claim rejections under 35 U.S.C. §§ 102 and 103(a) should be withdrawn, for the following reasons.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. § 2131, 8th ed., Rev. of May 2004.

The rejection of claims 1, 3, and 6 under 35 U.S.C. § 102(b) as anticipated by Kim is improper, because Kim fails to teach each and every element of these claims. For example, independent claim 1 recites a method for forming contact openings that includes, "b) forming an interlayer insulating layer over the substrate and the bit line patterns; [and] c) etching the interlayer insulating layer by using the bit line patterns and an etching mask defining a straight line shape as a mask."

The Examiner considered Kim's bit lines 5' as corresponding to Applicants' claimed bit line patterns, and Kim's insulating layer 4 as corresponding to Applicants' claimed interlayer insulating layer. Office Action, p. 2. However, as Figs. 4A-4D show, Kim's insulating layer 4 is not formed over bit lines 5'. Kim thus fails to teach at least "forming an interlayer insulating layer over the substrate and the bit line patterns," wherein the interlayer insulating layer is etched "by using the bit line patterns and an etching mask defining a straight line shape as a mask," as required by claim 1. Claim 1

is not anticipated by Kim and is therefore allowable over Kim. Claims 3 and 6 depend from claim 1 and are also allowable over Kim.

The rejection of claims 1-3 and 6 under 35 U.S.C. § 102(e) as anticipated by Kohyama et al. is also improper, because Kohyama et al. fails to teach each and every element of these claims.

Applicants first note that the Examiner incorrectly considered Kohyama et al.'s element 105 in Fig. 5 as corresponding to Applicants' claimed bit line patterns. Office Action, p. 3. Fig. 5 of Kohyama et al. only shows a mask pattern and does not show patterns of any specific structures. See Kohyama et al., col. 5, ll. 60-61. In other words, element 105 in Fig. 5 is only a mask pattern "for forming a bit line contact," and cannot correspond to Applicants' claimed "bit line patterns [formed] **over a substrate**." See Kohyama et al., col. 6, ll. 15-16. (Emphasis added.) Kohyama et al. actually teaches that "the silicon nitride film 27, the silicon oxide film 26, the tungsten film 25 and the glue layer are patterned by using the bit line pattern 105 shown in FIG. 5 so that a bit line BL connected to the plug 21 is formed." Kohyama et al., col. 7, ll. 4-8. Therefore, the Examiner may at most consider Kohyama et al.'s bit lines BL as shown in Fig. 7G as corresponding to Applicants' claimed bit line patterns.

However, even assuming that Kohyama et al.'s bit lines BL correspond to Applicants' claimed bit line patterns, Kohyama et al.'s BPSG film 22, allegedly corresponding to Applicants' claimed interlayer insulating layer (Office Action, p. 3), is not formed over bit lines BL. Kohyama et al. fails to teach at least "forming an interlayer insulating layer over the substrate and the bit line patterns," wherein the interlayer insulating layer is etched "by using the bit line patterns and an etching mask defining a

straight line shape as a mask,” as required by claim 1. Claim 1 is therefore allowable over Kohyama et al. Claims 2-3 and 6 depend from claim 1 and are also allowable over Kohyama et al.

Applicants also traverse the rejections under 35 U.S.C. § 103(a), because a prima facie case of obviousness has not been established.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. M.P.E.P. § 2143, 8th ed., Revision of May 2004.

Regarding the rejection of claims 2-6 and 8-9 under 35 U.S.C. § 103(a) as unpatentable over Kohyama et al. or Kim, in view of Cooper et al., Applicants first note that, as discussed above, Kim and Kohyama et al. both fail to teach or suggest at least “b) forming an interlayer insulating layer over the substrate and the bit line patterns; c) etching the interlayer insulating layer by using the bit line patterns and an etching mask defining a straight line shape as a mask,” as recited in claim 1, from which claims 2-6 and 8-9 depend.

Cooper et al. does not cure the deficiencies of Kim and Kohyama et al. As Applicants noted in the Amendment filed on January 4, 2005 (“Amendment”), page 9,

Cooper et al. fails to teach or suggest at least “c) etching the interlayer insulating layer by using the bit line patterns and an etching mask defining a straight line shape as a mask,” as recited in claim 1. Thus, neither Kim, Kohyama et al., nor Cooper et al. teaches or suggests at least “c) etching the interlayer insulating layer by using the bit line patterns and an etching mask defining a straight line shape as a mask,” as recited in claim 1, and a prima facie case of obviousness has not been established. Therefore, claim 1 is allowable under 35 U.S.C. § 103(a) over Kim, Kohyama et al., and Cooper et al. Claims 2-6 and 8-9 depend from claim 1 and are also allowable.

Finally, regarding the rejection claims 7-8 under 35 U.S.C. § 103(a) as unpatentable over Kohyama et al. or Kim, in view of Chang et al. and Tsai et al., Chang et al. and Tsai et al. fail to cure the above-noted deficiencies of Kim and Kohyama et al. with regard to claim 1, from which claims 7-8 depend.

As Applicants stated in the Amendment, page 10, Chang et al. and Tsai et al., taken alone or in combination, fail to teach or suggest at least “c) etching the interlayer insulating layer by using the bit line patterns and an etching mask defining a straight line shape as a mask,” as recited in claim 1, and required by claims 7-8. Thus, a prima facie case of obviousness has not been established, and claims 7-8, which depend from claim 1, are allowable under 35 U.S.C. § 103(a).


In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of pending claims 1-9.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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